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A Beginning Course in Architectural Drawing for Anderson High School, Austin, Texas

George Ellis Emery

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A BEGINNING COURSE IN ARCHITECTURAL DRAWING FOR ANDERSON HIGH SCHOOL, AUSTIN, TEXAS

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G. E. E.

APPROVAL SHEET

The undersigned, appointed by the Dean of the Graduate Faculty, have examined a thesis entitled:

A BEGINNING COURSE IN ARCHITECTURAL DRAWING FOR ANDERSON HIGH SCHOOL, AUSTIN, TEXAS

presented by

George E. Emery

a candidate for the degree of Master of Science and hereby certify that in their opinion it is worthy of acceptance.

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CHAPTER I

INTRODUCTION

Statement of the problem. The school is the special agency set up by society to guide and direct the learning experiences of children of the community. The home, also being an institution for learning, obviously is a major factor in determining the kinds of experiences to which children are exposed in life outside the school.

When educational activities are based upon the needs and interests of those for whom they are planned, generally satisfactory outcome of training experiences can be expected. Youth must acquire suitable understandings, ideals, and attitudes to carry forward work and progress along all fronts of knowledge and activity. The problems of accomplishing these desirable learning experiences in the existing schools, have been increasingly acute in recent decades.

> Not once in a century and a half of national history has the curriculum of the school caught up with the dynamic content of American life. Although the gap between the two has been markedly cut down in the last three quarters of a century, nevertheless the American school has been essentially academic. Today much of the gap still persists.
>
> Not only has there been a huge gap between the curriculum and American life; a similar one has persisted to the present day between the growing child and the curriculum. There are indeed, three critical factors in the education process: the child, contemporary American society, and standing between them, the school curriculum. If the curriculum of our schools is to serve its true function it must be reconstructed and therefore must concentrate upon two foci; child growth and the dynamic content of American Civilization.[1]

The first duty of the school is to teach students to do better the

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[1] A. S. Barr, William H. Burton, and Leo J. Brueckner, Supervision, p. 426.

socially acceptable things that they are likely to do anyway. As simple as this statement sounds, its acceptance throws responsibility on every one concerned with education, and it is adaptable to every community.

If secondary education is to provide for all youth, it follows that a heavy emphasis must be placed upon general education, that is, education needed by all regardless of future vocation and upon training for dynamic and intelligent citizenship. Thus, the school and all of its activities should be primarily concerned with the improvement of the common life; the sharing of experiences; the problems of everyday living in the home, and in the immediate and wider community, and the development of a social philosophy acceptable to the common good of mankind.

If the preceding statements regarding the school's primary function in preparing youth for the desirable things that he is going to do anyway are unquestionably accepted, then, it can safely be ascertained that youth of succeeding generations will, from all indications, continue to engage himself in one of man's basic tasks, which is as old as history itself. This task is that of seeking and establishing a home.

The matter of helping youth to exploit and explore his skill, develop wholesome attitudes and tastes, and meet his responsibility in the performance of this duty intelligently should be directed most appropriately to the activities to be found in an adequate beginning course in architectural drawing, in the industrial arts area of general education. Fortunate, indeed, is the community whose school curriculum adequately provides such basic activities.

The basic curriculum of the Anderson High School, located in Austin, Texas, is no exception to other progressive attempts to be found in

secondary schools throughout the United States in preparing youth of Travis County to favorably live in and contribute to the success of the community and the democracy at large.

However, up to the present day, no subject area in the entire curriculum has successfully organized its activities so as to adequately develop interests and prepare students to acquire the proper attitudes required of them as potential home owners or skilled technicians engaged in the practice of architecture.

Therefore, the ultimate purpose of the writer in this study is to develop an adequate course of study in beginning architectural drawing to be adopted by the administration of the Austin Public Schools and to be added to the present curriculum of the Anderson High School for the 10th, 11th, and 12th grade students.

Delimitations. This study was limited to the development of an adequate beginning high school course in architectural drawing. The study is further limited to providing activities and experiences for the 10th, 11th, and 12th grade students of the Anderson High School, Austin, Texas.

Need for the study. In 1915, the Anderson High School offered to its students for the first time activities in manual training. These activities then included woodwork and mechanical drawing.

Later, a course in automobile mechanics was added to the manual training department of this school. Due to certain economic difficulties, however, this course in automobile mechanics was discontinued.

From that time to the present day only the courses in woodwork and

mechanical drawing have remained and they now constitute the industrial arts department in the Anderson High School.

The general activities of the present mechanical drawing course, offer no such learning experiences that attempt to satisfy the fundamental need of preparing youth for the responsibility of some day establishing a home. The homemaking experiences provided in the home economics department of the Anderson High School, are fundamentally designed to train students to acquire a working knowledge of the proper maintenance of a modern home, and its furnishings. But the establishment of the physical home is first to be sought, then proper maintenance of this institution follows in its appropriate sequence. Therefore, it is from this basis, primarily, that this study was evolved.

Definition of terms. The terms listed below shall have the following connotations as they appear throughout the study.

Course of study. Specifically, a listing of suitable learning experiences, of teaching procedures of instructional aids, and techniques of evaluation suited to the particular group of learners within a given community.

Architectural drawing. An organized study of building symbols, lines and notations and their proper relation when used graphically to represent small home construction.

Method of procedure. In the accomplishment of this study it is necessary that four fundamental questions be answered. These questions are:

1. What is involved in making a course of study?
2. What are student needs?
3. What are the contents of existing high school courses of of study in architectural drawing?
4. What are the opinions of architects with regard to what should be included in a beginning course?

In order to be able to know some of the principles involved in making a course, it is necessary to make an interpretative analysis of the views of authority in the field of course making, as to what should be included in a course of study, or what the principles of course making are.

Since it is for the students that the course is being developed, it is necessary to know something about their needs and methods commonly used to determine the needs. This information is obtained by analyzing the information taken from authorities in the field of child growth and development, and other authorities in the field of secondary education.

Knowing the principles of course making and the needs of the students for whom the course is being developed, it is deemed wise to survey some of the existing courses of study presently used in some of the Texas high schools.

This information is necessary to the study in order to ascertain what learning activities, materials, and teaching techniques are used in some of the other Texas school systems.

In order to supplement the information concerning just what activities should or should not constitute a high school beginning course in architectural drawing, a questionnaire will be conducted among experts

engaged in the profession. It is the hope that an analysis of these opinions and reactions will serve as an authoritative support for those experiences which will be placed in the course of study.

The writer hopes to accomplish this study by an analysis of the essential procedures involved in the making of a course in the light of what student needs are, and how to ascertain them appropriately supported by an analysis of what is actually being accepted and taught in other schools, and the opinions of architects as to what should constitute a beginning course of study in architectural drawing.

Survey of related studies. A survey of the literature revealed that several comparatively recent studies have been made that seemed to have been inspired from the realization that there should be developed some organized program of activities that will give students experiences in intelligent home planning.

A year earlier, in 1949, Victor A. Ursin of the University of Minnesota developed "A Study Guide for Architectural Drafting in Senior High School." His purpose in such a development was to provide a guide for the teaching of architectural drafting in a less cut-and-dried manner, and to offer suggestions for teaching the subject with due consideration to the principles of adolescent learning. He attacked the study from a problem-solving point of view, assuming that student interest and initiative should be used to the most advantage. The objectives of his course in architectural drawing were outlined principally in terms of expected behavior changes of students.

In 1940, W. W. Gibson of Texas A & M College made a similar study

entitled, "The Development of Instructional Materials Concerning House Planning for Industrial Arts Departments." He developed an acceptable guide.

Sources of data for the study. In securing the necessary information for this study, the author resorted to many textbooks, pamphlets, research journals, and magazines. Personal opinions were secured through direct interviews and questionnaires. Some high school courses of study in architectural drawing were secured and analyzed. Information from several related studies in the field was secured and found helpful.

CHAPTER II

WHAT IS THE FUNDAMENTAL STRUCTURE OF A COURSE OF STUDY

Definition. The typical course of study, as we have known it for decades, consisted of a subject-matter outline. Early courses often stopped with this; later courses of study, however, have come to include some suggested learning activities, teaching procedures, diagnostic devices, and techniques of evaluation. Everyone from parents to students believed that the subject-matter must be "mastered," that is, memorized. Occasionally, these early courses went further, prescribing the day-to-day amounts of subject-matter to be covered, specifying the number of minutes per day to be devoted to the lessons, and listing the specific fact questions to be used. This concept of the course of study was deserted several years ago by interested researchers in the field who have developed more timely concepts with regard to our modern courses of study.

Then, there was the type of course which was based upon the educational philosophy that regarded the aim of education to be that of preparing the child for adult life through the use of adult selected and arranged subject-matter. The materials selected and assigned by adults to given school levels were often not easily comprehensible by the children at those levels. Biddick's pointed commentary summarizes this:

> Often such a course (even when the teacher has been permitted the greatest possible freedom in its use) has tempted him to unduly influence pupils to "choose" study subjects that do not truly relate to their interests and needs. Then there was always the fear of being critized for having failed to "cover" the course of study, or of jeopardizing the security of pupils in their later work. In short, they were thwarted in their desire to be of real service to their pupils.
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> In many schools the net results of this has been that teaching

> guides - materials designed to aid the teacher in deciding what and how to teach have ceased to be of much help. Many teachers and principals have asked for some new type of guide that would not check them in their desire to meet the real needs of pupils - indeed something that would help to set them on their way.[2]

The concept that the school can best prepare for adult life through guiding the pupil as he lives and grows is dominant. The understandings, attitudes and appreciations, abilities and skills which the pupil needs now in the solution of his current problems, turn out to be similar to those which he will need later in solving adult problems. Understandings, attitudes and abilities needed in adult life begin their growth in the nursery and are developed through continuing experiences until the learner emerges into adult life. Therefore, in keeping with the above stated concept, the following definition of the term, course of study, will be accepted as suitable and coherent in its meaning to the development of the problem. A course of study is the organization of learning experience units, of teaching procedures, of instructional aids, and of evaluational techniques suited to the particular group of learners within a given community.

Fundamental structure of a course of study. A course of study is the teacher's guide in using the curriculum. In addition to those elements which have already been pointed out as general constituents of a course of study, there are almost always the suggestive objectives or desired outcomes that actually form the nuclear of the course.

The construction of a course of study involves numerous important

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[2] Mildred L. Biddick, "The Preparation and Use of Source Units," Progressive Education Association, (no date, probably 1940), pp. 2-3.

decisions. Judgment is required in regard to the most urgent needs of students, and the relative values of different learning activities and materials in meeting these needs. Decisions on the inclusion or omission of certain items of content as well as their most suitable time allotment and grade placement demand intelligent discrimination.

The teacher occupies an advantageous position in respect to many of these matters. His close proximity to students in the process of learning, in addition to his familiarity with the subject matter, provides him with invaluable insights into the problems of course of study construction. It is to be noted, however, that mere proximity to a problem does not always insure adequate comprehension of its implication. Douglass and Mills suggest the following steps in instituting a course of study to meet the needs of a particular group of students:

1. Obtain pertinent, first-hand information in regard to the students and the social scene of which they are a part. The most significant types of data are in regard to:

   a. The students to be taught, with particular reference to their:

      (1) Needs - economic, intellectual, physical, and social

      (2) General - experimental background, including the level of school achievement or previous preparation and work experiences

      (3) General intelligence

      (4) General and special interests

      (5) Home conditions

      (6) Community background [3]

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[3] H. R. Douglass and H. H. Mills, Teaching In High School, p. 284.

(7) Vocational and future educational ambitions and plans

b. The local community with particular reference to its:

(1) Resources - cultural, educational, recreational, and natural

(2) Population - characteristics, nationality, etc.

(3) Attitudes and mores - economic, political and religious

(4) Adult vocational activities

(5) Recreational facilities for adults and youth

(6) Welfare and youth - serving agencies

c. The social order, with particular reference to its:

(1) Characteristics

(2) Ideals

(3) Deficiencies

(4) Possibilities for improvement

(5) Trends

First-hand information on the subjects listed above should be obtained in advance, or as the teaching proceeds. Data concerning the students may be revealed by an examination of school records, interest questionnaires, interviews, and observational techniques. Active participation in community affairs provides the teacher with the best primary source of knowledge in regard to community life. A thorough knowledge of the local community, augmented by analyses and studies of the general social order, furnishes a basis for the understanding of the problems of society.

2. Supplement these primary sources of information about individual and social needs with data from various secondary sources[4]

Teachers usually do not have sufficient time nor facilities at their disposal to acquire at first hand all the data necessary for building a course of study. Hence, they have to rely upon secondary sources

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[4] Ibid., pp. 284-285.

of information.

a. Scientific educational research on curriculum problems by individuals and educational institutions

b. Studies of contemporary life by committees of national and regional organizations

c. Contemporary books and journals

d. Courses of study from other schools representing the combined judgment of teachers who have given considerable study to curriculum problems[5]

These courses of study may suggest techniques of obtaining data, as well as instructional materials, which may be adapted for use in a particular school. Too great reliance upon materials from other schools should, however, be avoided.

e. The opinions of competent persons on economics, educational and social problems

f. Publications of organizations representing different points of view. For example, that of the American Policies Commission entitled, "Education for all American Youth" should be fruitful in giving a proper perspective for the construction of courses of study in the modern secondary school.

g. The suggestions of "frontier thinkers" in different areas of contemporary life

3. Consider which educational needs are met by outside agencies and other school courses.[6]

The needs of youth are so diversified and numerous that no one agency can serve all of them. The assumption is frequently made that the school should limit its activities to the intellectual development of the child. All aspects of the child's growth are so interrelated that his

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[5] Ibid., p. 285.

[6] Ibid., p. 285.

needs cannot be provided for adequately in any single area to the exclusion of needs in other areas. Thus, in order to delimit properly the scope of a particular course, the teacher should make an inventory of the needs of his students which are not served by outside agencies. In planning a particular course of study, those activities provided for by other courses in school should also be omitted.

4. On the basis of the distinctive contribution which the course can make to meeting the needs of the youth which are not served by other agencies or school courses, formulate a set of specific objectives for the course.[7]

The inclusion of a course in the curriculum can be justified only to the degree that it contribute to individual and social needs. In formulating the objectives of the course, those stated in the official course of study should serve as a general guide. However, they should be adapted to the abilities, interests, and needs of a particular class.

5. Establish the validity of the objectives of the course by relating them to the educational philosophy of the school, as expressed in the official course of study.

6. Make an inventory of possible effective activities and learning materials coming within the scope of the course to ascertain the degree to which they contribute to the stated objectives of the course.

7. Consider what modifications are necessary because of time, equipment, and building facilities.

8. Take into account the requirements of accrediting agencies, colleges, local school authorities, and state laws.

9. Review the grade placement of activities and learning exercises suggested in the official course of study.[8]

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[7] Ibid., p. 285.

[8] Ibid., p. 286.

Recommendations of grade placement of materials in courses of study are usually made on the basis of experimentation or the judgment of teachers and experts in regard to the difficulty of the material and the interests of students at different grade levels. These recommendations require the careful study of the teacher in adapting the course to his students. The teacher should ascertain the mental and social maturity of the students in the class and not forget it when materials and experiences are selected.

10. Organize the content into units of instruction.[9]

In any form of organization, a distinction should be made between materials designed to meet the common needs of all students and those intended to serve individual needs. Another factor in organizing materials is the practicality of correlating them with materials from other fields.

11. Make a tentative time allotment to each unit on the basis of its relative significance in achieving the objectives of the course.[10]

However, time allotment cannot be made solely on the basis of the content involved. The abilities and backgrounds of the students are of utmost importance in every case where the element of time is involved.

12. Select from the teaching procedures suggested in the official course of study those which appear to be best adapted to the pupils concerned.[11]

Teaching procedures should be governed by the principles of effective learning. According to the law of apperception new learning has

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[9] Ibid., p. 286.

[10] Ibid., p. 287.

[11] Ibid., p. 287.

to be built on previous learning. In other words, teachers must begin with students where they actually are.

13. Evaluate outcomes in terms of the stated objectives.[12]

Evaluation should be continuous throughout the course, but a summary of the outcomes achieved should be made in the final phases. Until recently measurement was confined to the tangible outcomes of instruction, such as mastery of factual material.

14. On the basis of the results achieved, make a tentative revision of the course of study.[13]

Notations can be made of needed changes in the units, techniques and even objectives. The final revision should come at such time when the teacher has had the opportunity to know the students in a new class.

It is deemed wise to point out here that courses should not be prescriptive, but should provide for many variations in use suitable to the diverse conditions that exists in any system.

"Courses of study are not to be "followed," but used as guides and aids to teacher ingenuity in adapting to given situations."[14]

Characteristics of a good course of study. As an aid to the teacher in planning instructions, a course of study should have certain characteristics acceptable and coherent to the time tested philosophies of modern education. Numerous attempts have been made to set forth the qualities that should characterize a good course of study.

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[12] Ibid., p. 287.

[13] Ibid., p. 287.

[14] Barr, Burton, and Brueckner, op. cit., p. 657.

The North Carolina Curriculum Bulletin, 1934, sets up seven standards for courses of study as follows:

1. A course of study should state the general objectives or aims to be accomplished.

2. It should specify what to teach in the way of subject matter.

3. It should specify when to teach it.

4. It should suggest how to teach the different phases of work.

5. It should provide adjustments for individual differences of pupils.

6. It should provide for measurement of results.

7. It should provide or suggest teacher helps and references.[15]

In a comprehensive study of 498 courses of study, Stratemeyer and Bruner found certain points of strength and weakness observed in these courses of study. Concluding their analysis, the following items were listed as general characteristics which should constitute every course of study:

1. Illustrative lessons of teaching procedure

2. Standards of attainment

3. Suggested standards for checking the results of teaching (e. g., tests, scales, etc.)

4. Type problems, projects, etc.

5. Suggestions for the correction of specific difficulties - remedial materials.

6. Suggested drills

7. Suggestions as to the proper use of illustrative materials,

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[15] Suggested Procedures for Curriculum Construction and Course of Study Building, 1934-35 (Publication No. 179, North Carolina State Superintendent of Public Instruction, 1934), pp. 104-105.

graphs, etc.

8. Basic reference for children

9. Supplementary references for children

10. References (for the teacher) to experiments, magazines, books treating of theory of method

11. References (for the teacher) to subject matter and content

12. Suggestions for teaching children how to study[16]

In the final analysis, the nature of the curriculum and the objectives of the course of study will determine the contents of a course of study. If the concept is accepted, that the course of study should serve as a guide and be a source of raw materials for the use of the teacher in planning the work of the school, the following list of items is recommended as suggestive materials which may be included. It is wise to note here, however, that the order in which these items are listed is not obligatory, but significant in that they seem to meet a primary demand that the course of study be arranged so as to provide maximum usefulness. The items suggested are:

1. A statement of point of view, or the philosophy upon which the entire curriculum is organized. This should be stated as far as possible in simple, non-technical language. It should include brief statements of basic concepts of the curriculum and of the manner in which these concepts operate.

2. A statement of the aims of education. These should be stated in such a manner that they may be referred to easily. The function they are to perform and the way in which they are to be used should be set

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[16] Harl R. Douglass and Hubert Mills, Teaching in High School, p. 45.

forth.

3. Instructions in the use of the course of study. These should be explicit and sufficiently detailed to guide the teacher in the use of every section of the course of study. Suggestions for planning and developing units, including plan sheets and inventory sheets, planning daily programs, and keeping proper records should be included.

4. Materials organized by grades. These should be presented according to facilitate easy reference to the work of any grade. All of the materials necessary to develop the instructional program, particularly suggested activities, and reference materials for both students and teacher should be included.

5. Teaching procedures. General teaching procedures that may be adequately employed should be presented in sufficient detail to provide the teacher with the essential, concise information about a given activity.

6. Specific subject matter materials. Subject matter designed especially for the development of special abilities should be outlined.

7. General references. Lists of publications, lists of adopted textbooks, and supplementary materials for use may be included here.

CHAPTER III

WHAT ARE STUDENT NEEDS

Man is born with certain cravings, desires, and wants, and certain capacities which are at his immediate command. He lives, however, in a world with natural and human objects; and these objects place limitations upon what happens to him. Man's contact with other men and groups of men tends to control and withhold certain desires and impose upon him the conventions of his social environment. Though there still remain certain of the necessities of life that are furnished without man's toil, however, most of them are acquired only by intelligent effort. Through creative thinking and effort, each individual may make the best of any situation in which he finds himself. In attempting to make the best of certain situations one generally develops new means of control, and these give rise to new problems, new needs, and new conventions.

> When desires cannot be satisfied, individuals may need to be trained to bear their scarcities with others, and to adjust themselves, with reasonable effort, to the conditions of life as they find them. Eventually we should achieve a more abundant life.[17]

Man has always had opinions about his needs. Sometimes his opinions have been well founded in factual knowledge and sometimes not. One of the most common sources of educational guidance concerning needs to which school people may turn, are the opinions of experts and opinions of committees as revealed in reports. Although, there are certain limitations to opinions and the consensus of experts, this approach remains to

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[17] Barr, Burton, and Brueckner, op. cit., p. 172.

be one of our best sources of guidance in respect to needs. The three classifications of needs which will be considered in this phase of the study are: (1) the felt needs of the students in general; (2) the needs of all students considered important by adults, teachers, supervisors, administrators, parents, and other adult members of the community; and (3) the broad social needs of mankind.

There are, today in our society, many people who feel that better progress will be made in school work if more attention is given student's wishes, attitudes, and desires. Among the most popular affirmative approaches to this concept is a checklist composed of short statements representing common problems of students devised by Ross L. Mooney. Mooney's checklist consisted of 330 items or phases grouped under eleven general catagories that are directly related to our human society. These catagories are:

> (1) Health and Physical Development; (2) Finances, Living Conditions, and Employment; (3) Social and Recreational Activities; (4) Courtship, Sex, and Marriage; (5) Social-Psychological Relations; (6) Personal-Psychological Relations; (7) Morals and Religion; (8) Home and Family; (9) The Future: Vocational and Educational; (10) Adjustment to School Work; and (11) Curriculum and Teaching Procedures.[18]

The student uses the checklist by marking the problems which are of particular concern to him by writing a summary in his own words. Some of the items that constitute the general catagories were phrased as follows: "Wanting more help from the teacher," "Slow in reading," "In too few school activities," "Shyness," "Having no close friends," "Needing to decide on an occupation," "Family opposing my choice of vocation," and the

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[18] Ross L. Mooney, "Exploratory Research on Students' Problems," Journal of Educational Research, pp. 218-224.

like. Remmers and Shimberg have also successfully developed a "Youth inventory" similar in nature to that devised by Mooney. The basic structure of this youth inventory started from a list of personal problems that a large sampling of adolescents were asked to make. These problems were presented in several hundred items in the form of a checklist suitably grouped under each of the Ten Imperative Needs and stated in simple terms comprehensible by normal youth from grades 7 through 12. These checklists have been used extensively by teachers to provide data for individual guidance and as basis for curriculum improvement. A typical example of the structure of this youth inventory follows:

1. WORK

All youth need to develop skill as workers and those understandings and attitudes that fit the worker to earn money.

a. Do you feel the need for more information about jobs and professions?

b. Do you have success more often than failure in your school work?

c. Do you know for what kind of jobs each of your school subjects can help to prepare you?

d. Do you know about local job opportunities, requirements, and pay?

2. HEALTH

All youth need to develop and maintain good health and physical fitness.

a. Can you apply first aid and artificial respiration?

b. Are you as happy as other people seem to be?

c. Are you worried about your own growth and health?

d. Do you know how to select a well-balanced diet of carbohydrates, proteins, minerals, vitamins, etc.?

3. CITIZENSHIP

All youth need to understand the right of the citizens of a democratic society and their duties as members of the community and citizens of the State and Nation.

a. Do you feel that other students do not like you as well as you wished they did?

b. Do you feel at ease in talking or working with people of another race, color, or creed?

c. Would you like to share with your classroom teachers in planning your school work?

4. HOME

All youth need to understand the place of the family for the individual and society and what helps in successful family life.

a. Do you feel that there is lack of understanding between you and your parents, or brothers and sisters (if any)?

b. Can you read the meters - gas, water, or electric - in your home?

c. Do you need to learn about making dates or choosing a mate, or making a home?

d. Do you understand your own sexual growth and its effect on what you feel and do?

5. THRIFT

All youth need to know how to buy and use goods and services intelligently and to understand both the values received and the consequences of their acts.

a. Do you know how to pick the best quality in the food and clothes you buy?

b. Do you know where to find information about how and what to

buy?

c. Are you yourself, ever asked to judge the value and success of your school work or personal development?

d. Do you know how to invest money - buy stocks and bonds, etc.?

6. SCIENCE

All youth need to understand the scientific method, the influence of science on human life, and the main scientific facts concerning the nature of the world and of men.

a. Do you need practice in working out practical problems of your own, gathering facts and information, judging the facts, knitting them together, and coming to your own conclusions?

b. Do you understand people - what makes most people think, feel, and act as they do?

c. Do you understand how motors, toasters, thermometers, etc., actually work?

7. APPRECIATION

All youth need to learn how to appreciate beauty in literature, art, music, and nature.

a. Do you believe that you are learning to enjoy better art, better music, and better literature, as you go on with your education?

b. Have you been on any trips to art museums or concerts, or for nature study?

8. LEISURE

All youth need the ability to use their time well and to divide it wisely, balancing activities that yield satisfaction to the individual with those that are socially useful.

a. Does your community provide enough places for wholesome recreation?

b. Do you feel that you are "left out of things" in school?

c. Are you doing any work on what may be your lifetime hobby?

9. OTHER PEOPLE

All youth need to develop respect for other persons, to grow in their insight into values and principles, and to be able to live and work with others.

a. Do you know how to be a good committee chairman?

b. Do you feel the need to know more about introducing people, about courtesy, etc.?

c. Do you prefer to be by yourself rather than with other students?

d. Do you feel the need to learn more about getting along with people?

10. LANGUAGE

All youth need to grow in their ability to express their thoughts clearly and to read and listen with understanding.

a. Do you use good written and spoken English in all of your classes?

b. Do you wish that you knew how to study better?

c. Are you developing the habit of daily newspaper reading?

d. Can you write a good letter or composition?[19]

Raths offers a similar instrument for identifying the needs of children. His instrument consists of 160 items relative to eight general needs as follows:

> (1) A feeling of belonging, (2) A sense of achievement, (3) Economic security, (4) Freedom from fear, (5) Love and affection, (6) Freedom from guilt, (7) A share in making decisions, and (8) Integration in attitudes and beliefs.[20]

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[19] Science Research Associates Youth Inventory, (no volume given), cited by Frederick L. Pond, op. cit., p. 48.

[20] Louis Raths and Lawrence Metcalf, "An Instrument for identifying Some needs of Children," Educational Research Bulletin, (October, 1945), p. 169.

On the basis of the previously mentioned studies by some authorities, it is interesting to note the consistency of such needs pointed out in various categories as, (1) Health, (2) Leisure and Recreational Activities, (3) A Fundamental Command of Language, (4) Social Relationships with Others, (5) Moral and Religious Values, (6) Family and Marriage Life, and (7) Future Vocations.

The degree to which these needs of youth are met is determined largely by the effectiveness of curriculum practices. The extent of these practices is often used as a criterion for the evaluation of school status. Direction in the accomplishment of meeting these broad needs is given - not by what others have done, but by actual experience on the part of the people who will use the data. Generally, a co-operatively developed questionnaire, an inquiry on student needs is provided for this purpose. There are, however, some authorities in our society today who feel that the students' attitudes and reactions are acceptable but not completely sufficient basis for the establishment of valid needs. Since one basic function of the modern secondary school is to direct the growth of students who are to live in and contribute to a future society as adults, the wishes, attitudes, and desires set up by today's adults are deemed by some to be more valid in scope than those felt needs identified by youth. Bobbitt, employing an approach based upon an analysis of certain activities, list the following areas in which a degree of proficiency is achieved or needs met in every child, regardless of race or conditions:

1. Language activities
2. Health activities
3. Citizenship activities

4. General social activities
5. Spare-time activities
6. Keeping oneself mentally fit
7. Religious activities
8. Parental activities
9. Unspecialized non-vocationalized activities
10. The labors of one's calling[21]

In the light of student needs considered important by adults, Barr, Burton, and Brueckner offer a listing of broad categories growing out of child growth and development:

1. Needs growing out of the facts of physical and motor development.

   The child is a growing, developing, maturing physical being. His needs are chiefly those of a good physical environment; protection against disease; good nutrition; opportunities to be active; adequate rest, sleep, and relaxation; proper clothes; and good physical management.

2. Needs growing out of the facts of mental growth.

   The child is growing mentally in sustained attention, in intelligence, in the development of concepts and reasoning, and in the acquisition of mental skills and language. His needs are for activity and experience.

3. Needs growing out of the facts of emotional growth.

   The child is growing emotionally in becoming acquainted with the fundamental emotions of fear, anger, and affection; in adjusting to conflicts and in developing emotional control. There is a growing need for security, social approval, and success.

4. Needs growing out of the facts of social growth.

   The child is growing socially: developing sympathy, friendships, aggressive and submissive behavior, competitive activi-

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[21] Franklin Bobbitt, How to Make a Curriculum, p. 8.

ties, leadership, understanding of other people and skill in working with them, and moral values. The needs in these areas are for understanding and sympathetic assistance.

5. Needs growing out of the growth of the child as a whole.

The child is a developing whole. There is need for well-integrated, wholesome, pleasant, forceful, and well-adjusted personalities.[22]

Every individual has needs - some individuals have more needs than others. Some of these needs are inherent with the individual arising out of biological processes, and some are acquired. In a very real sense the ultimate purpose of modern education is to satisfy these normal needs of man and mankind in a more or less tangible way. Unfortunately, however, man lives in a world of many insufficiencies in which to satisfy one's own needs as fully as one would desire is, in some instances, to stand in the way of the satisfaction of the needs of others. Thus, one finds himself in a state of conflict. Under such conditions the duties of education and of those interested researchers in social planning become that of maintaining some balance between the needs of the individual and the needs of the larger group of which he is a part. At times, to satisfy our needs we can do so only through the assistance of others. Social ethics, moral and legislative acts are merely the rules of fair play in a competing and democratic society.

According to this conception of our social order considerable attention has been given in recent years to some acceptable determination of the broad social needs of man.

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[22] Barr, Burton, and Brueckner, op. cit., pp. 168-169.

In the process of this venture just as in all valid research, when a number of persons turn their attention to a complex issue, different techniques of dealing with the issue arise. Several different approaches have been employed in determining the broad social needs of man.

At least six of these approaches are: (1) biological and psychological studies of the nature and needs of man; (2) historical studies of social trends; (3) activity analysis of adult life; (4) studies of the errors, shortcomings, and difficulties experienced by adults; (5) studies of successful and unsuccessful individuals, communities, and institutions; and (6) consensus of experts. These sources of information concerning needs are not of the same value as to the fruits of their research, but they all represent a definite attempt to supply, in one way or the other, more accurate data relating to the broad social needs of man.

On the basis of information thus secured and of an analysis of the consensus of some authorities in the field, certain definite recommendations for determining what student needs are, follows:

1. Since youth is the chief character involved in the learning process, it would seem most logical that certain first hand information from youth be sought, concerning his attitudes, desires, and problems. This is most adequately done by asking the youth of a particular situation directly through interviews or suitably constructed questionnaire.

2. The teacher must study and observe continuously their physical growth, mental development, and social maturity.

3. A convenient organization in some particular form may be accomplished from the expressed reactions of youth himself combined with such data secured through the teacher's observations.

4. Supporting these reactions and observations by authoritative consensus a reasonably accurate discovery of the needs of the particular youth concerned will evolve.

CHAPTER IV

SURVEY OF SOME EXISTING COURSES OF STUDY IN ARCHITECTURAL DRAWING FROM TEXAS SCHOOL SYSTEMS

The writer was only able to obtain four courses of study in connection with this study which will be sumarrized as follows: Two courses of study for architectural drawing were secured from the Dallas Public School System. One was published in 1945 and the other was published in 1952. A course of study was secured from the Fort Worth Public School System which was published in 1939. The fourth course of study secured was actually taken from the Trade and Industrial Handbook of Veterans Education published in 1950 by the Division of Vocational Education and Rehabilitation of the Texas Education Agency.

In analyzing these courses, it was interesting to note the frequency of certain units of learning in each course considered, both, desirable and necessary in contributing to the student's knowledge of intelligent home ownership and the fundamentals of the practice of architecture. The frequencies of these units are pointed out in the accompanying chart. The list of broad learning units shown in the chart were taken from the course of studies concerned in the survey.

According to the tabulation, the Dallas Public School Guide for Industrial and Vocational Arts, published in 1952, is most extensive in its inclusion of the units listed. The Fort Worth Industrial Arts Guide was the least extensive in the inclusion of these units in its course of study.

Due to the accepted practices of architecture, its knowledge and skills, it was noted that none of the courses of study surveyed listed

certain units to be taught in the beginning course and certain other units to be taught in the advanced course in a high school program. This being, more or less, left to the discretion of the teacher and the principal.

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*The schools represented by the numbers 1, 2, 3, and 4 as found in TABLE I are as follows: (1) Dallas Public Schools, 1945; (2) Dallas Public Schools, 1952; (3) Fort Worth Public Schools; and (4) Veterans Education, Texas Education Agency.

CHAPTER V

SURVEY OF ARCHITECTURAL EXPERIENCES INVOLVED IN THE TRADE

Frequency studies have been employed to a considerable extent in basic curriculum work. The field of curriculum study has received the most extensive use of the frequency technique.

> The underlying theory states that, since not everything known can be taught in school, the things which are socially most useful should be selected and taught. These, according to the basic assumption, can be discovered by an appropriate interpretation of frequency analysis of social activities and interests.[23]

As early as 1918, Franklin Bobbitt advocated "activity analysis" as a basis for determining curriculum objectives. He defined the curriculum as the entire range of consciously directed training experiences that the schools must use for completing and protecting the unfolding r range of the abilities of the individual. He stated that this total range of human activities, for which education should prepare, should be discovered by "analytic surveys."[24]

In 1923 another investigator, W. W. Charters believed that the activity which brings the most satisfaction in the long run is determined by the consensus of expert opinion.[25]

In obtaining opinions from experts engaged in the practice of architecture concerning what should be taught in a high school beginning

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[23] Carter V. Good, A. S. Barr, and Douglas Scates, The Methodology of Educational Research, (New York: Appleton-Century-Crofts, Inc., 1941), p. 346.

[24] J. Minor Gwynn, Curriculum Principles and Social Trends, (New York: The Macmillan Company, 1951), p. 148.

[25] Ibid., p. 149.

course in architectural drawing, a questionnaire frequency study was employed. Eighteen architects were interviewed. Response was secured from all interviewed. The frequency of response is shown in the accompanying graph. The personal contact with these experts was indeed a wholesome experience to the writer. The interviewees were interested in the study and were frank in their verbal expressions. A sample of the question - naire employed in the study is found on subsequent pages.

Findings. Actually, all of the architects expressed the attitude th that architectural lettering should not only be taught in a beginning course, but should be a continuous unit into the advanced courses since the skill of lettering is acquired principally through consistent practice. Sixteen felt that proper instrument care and usage should be stressed in a beginning course. Thirteen architects felt that floor plan and building material symbols should be taught at the beginning level as a definite phase of the language. Since it was felt by some that a student may not be able to take a basic mechanical drawing course before entering the beginning architectural drawing course at least ten architects suggested the unit in geometrical constructions be taught in this course. Approximately the same number of experts expressed the opinion that projection drawing should be taught. It was felt by eight architects that simple floor plans was not too advanced a unit after the student has learned certain other "foundational aspects" of the course. Although this particular response was a bit surprising to the writer, eleven architects felt that the unit on shades and shadows should be taught in architectural drawing in the beginning course. There were eight experts who felt that perspective drawing should be taught and several more architects than the

graph reveals expressed the attitude that the student should be taught in this course, something about the overall profession of architecture. The frequency of response to other units suggested is shown on the graph.

CHAPTER VI

ADEQUATE CONTENT OF A BEGINNING COURSE IN ARCHITECTURAL DRAWING

Nearly every student will normally some day have a home of his own to plan, or if he does not plan one to be built, he will at least have to pass judgment on the merits of some house which he chooses for his home. Whatever occupation he may enter on leaving school, his knowledge of residence construction will be of value to him.

Realizing the need for such a course which will provide experiences in home planning, it is necessary to consult with the students for whom the course is being planned. An excellent example of this procedure was carried out in an eighth grade class in a school in Red Springs, North Carolina. The teacher took an interest inventory of her pupils to determine just what should constitute a modern well-planned home. In pursuing the study, the teacher and her pupils worked cooperatively and did the following things: (1) Listed the desirable features of a modern and comfortable home, (2) Collected house plans from homemaking magazines, (3) Using graph paper and a commonly agreed upon scale each pupil drew and redrew plans for a future home. This unit was filled with seven weeks of intense study and interest for this teacher and her pupils; and it all began only because one pupil in the class complained one morning that she did not have enough room in her home to keep her things.

> As a result of the unit, I think the students and I all felt more a part of our homes and community, and, perhaps in the future homes there will even be more places for children to put their stuff.[26]

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[26] Dorothy A. Carruth, "If I Ever Have A Home," N E A Journal, (January, 1952), p. 42.

In arriving at this particular phase in the consummation of this study, it will be well to keep in mind the fact that the first duty of the school is to teach students to do better the socially acceptable things that they are likely to do anyway. This is a simple statement, but it is solid and sound in its implication. If this fact is accepted in the light of our present social order and with due respect to that which is likely to come, it follows that a heavy emphasis must be placed upon general education, that is, education needed by all regardless of future vocation.

The Anderson High School in Austin, Texas, just as other progressive secondary schools to be found throughout these United States, is obligated to this duty. The curriculum should provide some area definitely organized to meet the intrinsic needs of its students in becoming adequately orientated and adjusted to the task of developing the proper appreciation for a well planned home and be able to intelligently execute judgement either in the capacity of an ordinary consumer, or one engaged in the building industry.

In the light of the accepted interpretation of our authority in the field of secondary education as to its function in our society, the felt needs of a representative number of architects concerning what architectural experiences should be provided in a beginning course in high school, an analysis of some courses of study presently used in some Texas school systems, and the intrinsic needs of the present students in the Anderson High School and of those to follow, a beginning course of study in architectural drawing is set forth as follows:

COURSE OF STUDY FOR BEGINNING ARCHITECTURAL DRAWING

AIMS, OBJECTIVES, AND PHILOSPHIES OF EDUCATION

THE SEVEN OBJECTIVES OF GENERAL EDUCATION

1. A sound mind in a strong and healthy body
2. The ability to read and write, to think, study and act
3. A home life that is happy, unselfish, and democratic
4. The use of free time for worthy activities and pleasures
5. The knowledge and skill needed to earn a good living
6. An informed citizenship dedicated to the common good
7. A fine spiritual character that is trusted and admired[27]

A TENTATIVE PHILOSOPHY OF EDUCATION OF
THE AUSTIN PUBLIC SCHOOLS
MAY, 1947

The function of education in our democratic society is to provide an environment in which an individual may develop an understanding of our democratic philosophy and take his place in society as an effective member of a group.

Our Public school is an integral part of our community. The school, therefore, in order to execute the function of education in our democracy, must be concerned primarily with the individual pupil, and ways and means must be ascertained to get information about the individual who is served. This implies that the staff member must be student

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[27] John F. Friese, Course Making in Industrial Education, p. 208.

and learner of the pupil in order to determine the experiences the pupil has had and to ascertain not only what is to be taught but also how it is to be taught.

Each pupil has peculiar, individual characteristics; therefore, an educational program based upon individual differences rather than central tendencies must be developed. Since each pupil is different, the way in which he learns, the time at which he learns, and the place where he learns may be different from that of every other pupil. Learning is a complex process composed of biological, physiological, and psychological changes operating in a physical environment. Each pupil, therefore, must be accepted at the level the school finds him and be given the types of experiences which will insure his developing to his maximum capacity.

In order to ascertain the best experience for the pupil and to put into practice the principles of democracy, cooperative planning of pupils, teachers, parents. professional and lay groups should be utilized. Since the state provides each individual with twelve years of public education, each pupil is normally expected to receive his share. The pupil with expert, professional, and efficient guidance may be expected to be graduated or to complete his legal attendance during this twelve year period.

The curriculum is the sum total of experiences of the pupil for which the shcool can assume responsibility or upon which it can exert influence. It is, therefore, necessary that the environment for which

the school is primarily responsible must be one in which the pupil can come in contact with a wide variety of experiences. This environment can be provided to some extent through cooperative planning in classroom situations, through responsibilities delegated for certain tasks to be accomplished, and through current evaluation applied to individual and group accomplishments.

This staff should, therefore, strive to help the pupil understand his experiences from day to day and in cooperative planning will recognize that the goals of education are to be obtained by the individual according to his capacity. Finally, the school must be willing to put into practice democratic processes which will enable the individual to live happily and usefully and to move understandingly in our democratic society.[28]

EDUCATIONAL AIMS AND NEEDS OF ANDERSON HIGH SCHOOL
MARCH 22, 1950

AIMS

1. To provide an environment in which the individual adolescent may find an opportunity for clean, wholesome living and development.
2. To afford each pupil the opportunity of helping to determine the content and activities which constitute his school experiences.
3. To develop a curriculum which is flexible enough to meet the needs of pupils in class as well as in society.

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[28] A Tentative Philosophy of Education of the Austin Public Schools, Central Committee of the Austin Public Schools; May 1947.

4. To develop a curriculum which will permit an accumulation of knowledge that develops shills, interests, ideals, and attitudes to challenge his adolescence.
5. To uphold traditions as well as experiment in the light of modern trends in education.

NEEDS

1. Corrective classes for students who cannot meet their standard academic requirements.
2. A comprehensive program which will provide for the use of community resources.
3. The release of teachers from some of their responsibilities thereby enabling them to give more time to direction and guidance of pupil development.
4. A wider variety of offerings in industrial education beyond our limited scope.[29]

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[29] Educational Aims and Needs of Anderson High School, Memorandum, Committee on Instruction; March 22, 1950.

OVERVIEW

Architectural Drawing has, fundamentally, a threefold purpose:

Guidance: It provides the student with the opportunity to determine whether his abilities and interest lie in this particular field or some related field.

Learning: It provides the student with the opportunity to become a well - informed, critical consumer of all phases of planning or purchasing a home.

Doing : It also provides the student with a particular sensitivity for beauty in nature and the arts by offering an opportunity for creating and executing ideas which he finds interesting.

GENERAL OBJECTIVES

A. To develop the ability to read architectural drawings.

B. To enable each student to make acceptable plans for a home.

C. To point out the essentials of good house planning.

D. To show how to do simple estimating.

E. To develop ability to detect weaknesses in house construction.

F. To create in each student a desire to own and to plan his own home.

G. To gain some knowledge of the relative values of various building materials.

H. To offer an opportunity to develop an artistic taste in so far as it relates to house planning

I. To create in each student a disposition to help take care of his home, his school, his church, and public property.

J. To give an insight into the work of an architectural draftsman.

K. To give, in a measure, definite vocational training to those students who have selected some phase of the building trades as their future life's work.

SCOPE

This course is confined strictly to basic information in residence planning and design with a little simple estimating, if time will permit. Perspective drawings and renderings may be done by superior students to hold their interest. Boys and girls of the 10th, 11th, and 12th grades will be eligible to take the course. The course is designed primarily for those students who are potential home owners and not on the basis of those students who desire an engineering background for college training.

EXPECTED OUTCOMES

After completing the Beginning Architectural Drawing course the student should have attained:

1. Knowledge of architectural lettering and the ability to letter quickly, neatly, and legibly.

2. Knowledge of the duties, responsibilities and general background required of an architect.

3. Skills in the use and care of handbooks and other reference

materials.

4. Knowledge of building materials and their use and standard size.
5. Understanding of financing and legal procedure necessary for home building.
6. Knowledge of points to consider in selection of building location.
7. Appreciation of good home design.
8. Knowledge of methods used in pictorial representations and skills in their execution.
9. Ability to do creative planning.

GENERAL ORGANIZATION, MANAGEMENT, AND TEACHING OF THE CLASS

Time allotment. 1 hour per day, 5 days per week for 18 weeks.

1. Class discussion - at the discretion of the teacher.
2. Tests and reviews - at the discretion of the teacher.

Equipment available. There shall be available to each student a drawing desk, board, T square, 45 degree triangle, 30-60 degree triangle, and scales. Other limited equipment includes compasses irregular curves and protractors.

Economic status of the students. Students are required to purchase only such equipment as they have lost or used up in some manner. This includes pencils, and erasers. The equipment used is kept in cases within the schoolroom. Pupil purchases are kept to a minimum by using this method.

General methods used. The methods used in teaching various units in this course are lecture, individual instruction, demonstration, visual aids, and field trips.

Suggested methods for starting new pupils.

1. Seat students as they are to be seated permanently.
2. Explain desk arrangement in room and have each student identify his own number.
3. Explain:
   a. Use of drawers in desk and how to obtain keys.
   b. Procedure in coming into the room, leaving the room; conduct in the room.
   c. Taking out instruments, returning instruments, responsibilities for instruments.
   d. Use of reference books and materials.
4. Have students to read the first unit.
5. Record student data while students are reading.
6. Give the students the following while he is studying Unit 1:
   a. Drawing board
   b. T square
   c. Drafting tape
   d. Drawing paper

Suggested method for teaching new unit of work.

1. Begin discussion of unit of work. Explain or give an overview of work in general.

a. The assignment

b. Division of work into units

2. Discuss how the amount of work for a grading period is determined.

3. Demonstrate the manipulative skill required in the execution of the unit.

4. Check work, approval of work, record work.

5. Discussion.

6. Test and review.

OUTLINE OF LEARNING UNITS

1. Instrument and Equipment Care and Usage

a. Sizes of drawing paper to be used.

b. Pointing the pencil

(1) Different grades of drawing pencils

c. Proper Use and Care of Instruments

(1) Drawing board

(2) T square

(3) Triangles

(4) Scale

2. Architectural Lettering

a. Types

(1) Single slant Gothic

(2) Vertical single Gothic

(3) Whole numbers and fractions

3. Plan and Material Symbols
   a. Electrical
   b. Plumbing
   c. Doors
   d. Windows
   e. Common building materials
4. Floor Plans of Small Frame Homes
   a. General room sizes
      (1) Bedrooms
      (2) Bathrooms
      (3) Living rooms
      (4) Kitchens
      (5) Dining rooms
      (6) Closets and Storage Spaces
      (7) Porches
      (8) Hallways
5. Elevations
6. Survey of Modern Homes
   a. Field trips to homes
   b. Making scrap books of pictures taken from home-making magazines
7. Outside and Inside Wall Coverings
8. Floor Coverings
9. Mechanical Systems
10. House Orientation
11. Home Financing

12. Perspective Drawing

    a. Linear (one point)

    b. Angular (two point and three point)

    c. Perspective of small houses

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CHAPTER VII

SUMMARY AND CONCLUSIONS

Summary. It is the purpose of this study to develop a beginning course in architectural drawing for Anderson High School for the 10th, 11th, and 12th grade students. The need for the study was established from the basis of a definite need for organized experiences in intelligent home planning in the curriculum of this school.

In the accomplishment of this problem it was necessary to answer four fundamental questions which were as follows: (1) What is involved in making a course of study? (2) What are student needs? (3) What are the contents of existing high school courses of study in architectural drawing? and(4) What are the opinions of architects with regard to what should be included in a beginning course in architectural drawing?

In answering the first question a careful analysis of the judgment of authorities in the field revealed the following characteristics as being fundamental to any course of study: (1) A statement of point of view, or the philosophy upon which the entire curriculum is organized. (2) A statement of the aims of general education and the function and way they are to perform in their use. (3) Explicit instructions in the use of the course of study, suggestions for planning and developing units and keeping proper records. (4) Suggested organization of materials and activities by grades. (5) Suggested teaching procedures that may be suitably employed. (6) A list of specific subject matter materials, and (7) Lists of general references including supplementary materials.

The second phase of the study was concerned with what student needs are and some suggested methods for determining student needs. In this phase also was revealed the relationship of student needs to the development of an adequate course of study. It was found that on the basis of the findings of several studies, the consistency of such needs as (1) Health, (2) Leisure and Recreational Activities, (3) A Fundamental Command of Language, (4) Social Relationships with Others, (5) Moral and Religious Values, (6) Family and Marriage Life, amd (7) Future Vocations, yet prevailed amoung our youth as outstanding disillusions. On the basis of the available data authoritative consensus pointed out that the following steps might be considered in determining the needs of youth: (1) Seek first-hand information from youth concerning attitudes, desires, and problems, (2) The teacher must observe continuously the students' physical, mental, and social development, (3) The teacher must know something about the students' capacities, the home environment, and family attitudes, (4) Seek expert observations and research findings regarding child growth and development.

The third phase of the study indicated actual units of experiences, methods of teaching and references for high school architectural drawing courses of study presently used by at least three Texas school systems. The actual units taught in these courses were reasonably consistent with each of the available courses.

The fourth phase was also one of ascertaining the opinions of architects as to what they felt should constitute a beginning high school course in architectural drawing. A questionnaire survey was made. A

tabulation of the data secured to support the writer in being able to offer a suggested guide for high school beginning architectural drawing.

Conclusions. The available consensus of authority concerning the proper development and structure of any good course of study is sound and reliable; but it must be remembered by the teacher that a course of study can serve only as a guide and not a "prescription" guaranteed to comply with every situation for any teacher who chooses to use it.

Since courses of study are developed primarily for students, it is deemed wise to know something about their capacities, and needs growing out of: (1) the home and family environment of which they are a part, (2) the students' interests, attitudes, and problems, (3) the community pattern and trends, and (4) the consensus of authorities concerning the broad needs of mankind. Wise judgment must be exercised on the part of the researcher in the choice of the method used to determine these needs.

The available courses ofstudy secured for this study revealed that fundamentally the same units are taught in each one. It is evident that the most high school architectural drawing courses are more or less traditional in their offerings and there seems to be very little if any departure from the "traditional units" and Mantique drawing plates."

In order to overcome this, teachers must reexamine their aims and objectives, carefully evaluate their present courses of study in the light of our present social order, and maintain a genuine willingness to accept constructive experimentation.

The survey of opinions amoung the architects with regard to what units of learning should be included in a high school beginning course

in architectural drawing revealed interesting and worthwhile information. Most architects were interested in the study and were frank in their remarks. But a careful interpretation of their responses revealed a marked tendency for most of them to be highly technical in their opinions. In other words, most architects felt that this course of study was being developed for high school students who desired pre-engineering training. This tendency was carefully considered by the writer.

The suggested course in this study does not, in the least, represent the most practical and reliable beginning course in architectural drawing to be found; neither is it considered radical in its offerings. On the other hand, it is the sincere hope of the writer that materials presented in this study serve not only as a suitable guide in an actual situation but also as a direct challenge to other interested researchers in the process of discovering new techniques for helping youth to have the proper attitudes, appreciations, and abilities relative to the task of intelligent home planning.

CHAPTER VIII

RECOMMENDATIONS

The writer makes the following recommendations as a result of the study:

1. In formulating a course of study
   a. The teacher should make a survey of pertinent, first-hand information of the students who are to be taught.
      (1) This information should be concerning the student's:
         (a) Physical, mental, and emotional development
         (b) Social scene of which they are a part
         (c) General and special interests
         (d) Future educational ambitions and vocational plans
   b. A survey of the local community with regard to:
      (1) Resources - cultural, educational, and natural
      (2) Population - characteristics
      (3) Adult vocational activities
   c. The social order of the community with reference to:
      (1) Attitudes
      (2) Trends
   d. Supplement these primary sources of information about individual and social needs with data from secondary sources. Such secondary sources may be those found in (1) scientific studies in educational research on curriculum problems by individuals and committees, (2) contemporary books and journals, (3) courses of study from other schools which represent the combined judgment of teachers who have given considerable study to their particular situation, (4) the

opinions of competent persons engaged in employment in the particular area of interest.

e. On the basis of a careful interpretation of the data gathered, the educational philosophy of the school, and of the distinctive contribution which the course can make to meet the needs of the students, formulate a set of specific objectives for the course.

f. Make a list of possible effective activities and learning materials coming within the scope of the course.

g. Organize the content into units of instruction appropriate to the needs of the situation and the students to be taught.

It is further recommended that:

1. The suggested course of study for beginning architectural drawing submitted in this study be adopted in the present curriculum of the Anderson High School in Austin, Texas.
2. This course should be an elective course to the students.
3. Both, boys and girls, should be given the opportunity to elect the course and benefit by its activities.

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C. COURSES OF STUDY

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Industrial and Vocational Arts Resource Materials Bulletin. Dallas, Texas: Dallas Independent School District, October, 1952.

Outline for Teachers, Courses of Study in Mechanical Drawing. Dallas, Texas: Dallas Public Schools, September, 1945.

Trade and Industrial Handbook. Austin, Texas: Texas Education Agency, July, 1950.

APPENDIX

ILLUSTRATIVE MATERIALS

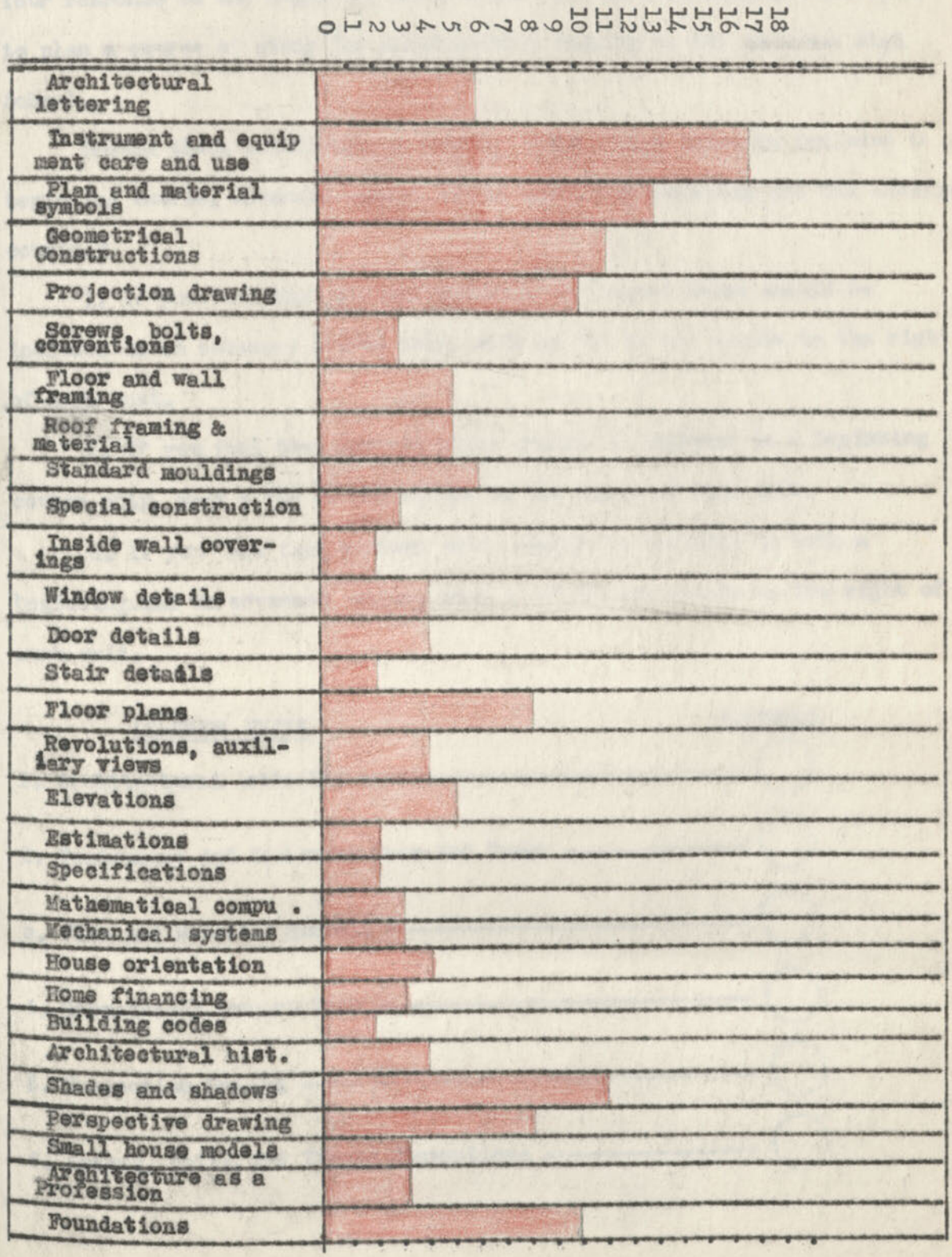
TABLE I

DISTRIBUTION OF CERTAIN LEARNING UNITS IN ARCHITECTURAL DRAWING COURSES OF STUDY

SCHOOLS				LEARNING UNITS USED IN ARCHITECTURAL DRAWING COURSES
1	2	3	4	
*	*	*	*	Architectural Lettering-(a) Slant and Vertical Gothic
	*	*		Instrument and Equipment Care and Usage
*				Plan and Material Symbols
			*	Geometrical Construction- Plane figures, Bisections
			*	Projection Drawing - Isometric, Orthographic
*	*	*	*	House Foundations - Types, Layout
*	*	*	*	Floor and Wall Framing - Types
*	*	*		Roof Framing and Materials - Types, Common Coverings
		*		Standard Mouldings- Most commonly used types
*		*		Special Features of Construction
		*	*	Inside Wall Coverings- Most commonly used
*	*	*		Door Details - Most commonly used
*	*	*		Window Details - Double Hung, Casement, Others
*	*	*		Stair Details
*	*		*	Floor Plans
*	*		*	Elevations
*	*			Estimations
*	*		*	Specifications
	*			Mechanical Systems
	*			House Orientation
	*			Home Financing
*	*			Building Codes
*	*		*	Architectural History
*			*	Shades and Shadows
	*		*	Perspective Drawing
				Mathematical Computations
	*			Making Small House Models
	*	*		Architecture as a profession

TABLE II

FREQUENCY RESPONSE OF ARCHITECTS AS TO LEARNING UNITS THAT SHOULD BE TAUGHT IN A BEGINNING ARCHITECTURAL DRAWING COURSE



- QUESTIONNAIRE -

DIRECTIONS

You are asked to carefully consider the following units listed below. Your response to the suggested units below will be instrumental in helping to plan a course of study for architectural drawing in the Anderson High School.

Should these architectural drawing units listed below be included in a beginning course, advanced course, or in both, the beginning and the advanced courses?

1. If you feel that certain units as are listed below should be included in an advanced course only, mark an "A" in the circle to the right of such unit.

2. If you feel that certain units should be included in a beginning course only, mark a "B" in the circle to the right of such unit.

3. If you feel that certain units should be included in both a beginning and an advanced course, mark a "C" in the circle to the right of such unit.

LEARNING UNITS	RESPONSE
1. Architectural Lettering	◯
2. Instrument And Equipment Care And Usage	◯
3. Plan And Material Symbols	◯
4. Geometrical Construction	◯
5. Projection Drawing	◯
6. Screws, Bolts, And Thread Conventions	◯

LEARNING UNITS	RESPONSE
7. Foundations	
8. Floor And Wall Framing	
9. Roof Framing And Materials	
10. Standard Mouldings	
11. Special Features Of Construction	
12. Inside Wall Coverings	
13. Window Details	
14. Door Details	
15. Stair Details	
16. Floor Plans	
17. Revolutions And Auxiliary Views	
18. Elevations	
19. Estimations	
20. Specifications	
21. Mathematical Computations	
22. Mechanical Systems	
23. House Orientation	

LEARNING UNITS	RESPONSE
24. Home Financing	◯
25. Building Codes	◯
26. Architectural History	◯
27. Shades And Shadows	◯
28. Perspective Drawing	◯
29. Making Small House Models	◯
30. Architecture As A Profession	◯

OTHER SUGGESTED UNITS

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

(Please sign your name below)

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